



**SYDNEY TRS-80 USERS GROUP NEWSLETTER**

P.O. BOX 297, PADSTOW 2211.

Volume 8 Issue 11 JULY 1988

**M E E T I N G A R R A N G E M E N T S**

The JULY meetings will be held at:

the **1st Sefton Scout Hall**  
**2 Waldron Road, SEFTON**

on **Saturday 9th of JULY**, and **Saturday 23rd of JULY**  
Both meetings will commence at 1:00 PM

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**WHO'S WHO**

President	Michael COOPER	331 7136
Vice President	Jim WHITTAKER	772 2809
Treasurer	Gordon SYMONDS	744 1901
Secretary	<b>Volunteers Required Urgently</b>	
Newsletter Editor	Brian KEEGAN	646 3448
Assistant Editor	John MERCER	579 2915
Club 80 Sysop	Michael COOPER	331 7136
Hardware Co-ordinator	Errol ROSSER	709 7646

**BANKCARD and MASTERCARD**

We have the facility to change your membership fees, or renewal fees to either MASTERCARD or BANKCARD. Additionally, purchases made on your behalf by the club may also be charged to your credit card. If you wish to use this service, please quote your card number, type of card, expiry date of card, and SIGN your request.

**Newsletter Closing Date**

- 9th July 1988 -

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**Reprinted from SYDTRUG NEWS, P.O. Box 297, PADSTOW 2211.**

EDITORS' ETCHINGS

By Brian KEEGAN

Firstly my apologies, this issue was to be the start of all jumping, all bouncing GRAPHICS printing of our Newsletter. BUT !! unexpected work load just did not leave me time to experiment with the software. Will try again next month.

Regarding one of my replies to queries on extending date entry for TRSDOS 6.2, I have found someone here in Australia with the patching program. I will give it a go and get back to you with the results. I have a Graphic Solutions HI-RES board fitted and the Basic supplied does not work with 6.3 so will give it a try.

As Gordon mentions in his report the membership renewals are going well, so any of you out there sitting on the fence get your renewals in and support the Club.

The Club's Elections are coming up in September so give serious thought to either nominating yourself or someone you think can do the job. As per our constitution ALL position on the Committee become available.

For stable operation of our Club we require conscientious people with a commitment to the club and its members, not the attitude of "GEE that would be fun for a while".

I URGE YOU MOST STRONGLY TO CONSIDER CAREFULLY THE PEOPLE YOU NOMINATE AND EVENTUALLY VOTE FOR.

We are at a fairly critical point in our club's existence, put the wrong people in your committee and our club will just fizzle away.

We have had a few fairly, shall we say "ACTIVE" meetings just lately and it's good to see people are interested in the running of their club. But for goodness (and our club's) sake let's make the "ACTIVENESS" constructive for if it isn't it will eat away at the heart of our organisation.

What else can I say ?? I have been in this club for a number of years now and count some dear friends in it's members, also I have learned a tremendous amount about computing and related subjects. To those ACTIVISTS, remember that our members belong for a wide variety of reasons ranging from technical interest to just plain friendship. Computing can be a very lonely hobby, and very frustrating as it a lucky member who can discuss the intricacies of DOS with his wife or girlfriend if you have one. Again to those ACTIVISTS, channel your energies to the good of OUR club, don't tear it down. Our club is a group of like minded people, it isn't your workplace where you must scrabble and scratch to get to the top of the heap.

RELAX, and enjoy our company.

At the back of this issue is a nomination form please fill it out and return to us before the 23rd July so that we can print them in August's issue.

Also at the back of this issue is a SURVEY form. This form is to enable the editor to determine the interests of our readers and hopefully present pertinent information to your computing interests. I respect the fact that some of you may not want to fill out the personal details, if so, NO PROBLEM !! BUT PLEASE RETURN the otherwise completed form so that we know that there is a reader out there with certain interests.

Last but not least I will not be seeking re-election to the position of EDITOR. A recent promotion and expansion of my responsibilities simply does not leave me the time to do this position justice, it is without doubt one of the most time consuming positions on the committee. Working with John MERCER has been good but our life styles are so different that we cannot make effective use of our time. In fact the printing schedule is the greatest burden as my work load is constantly changing.

I am however interested in the position of Secretary as I am fairly mobile. My wide field of interest and experience within our club's structure leads me to believe that I can do this position justice.

IT'S YOUR CLUB TOO

By Michael Cooper (SYDTRUG President)

At the June monthly meeting of SYDTRUG there was considerable discussion about the future of the club. This centres on two major issues; one the location of the meetings; the other was the composition of the committee.

Since the loss of the meeting venue at Mick's Micro Bits in Botany, SYDTRUG has conducted its meetings at the Sefton Scout Hall venue. Many members will be aware that this was only intended to be a temporary thing, and that another venue offering facilities similar to Mick's would be pursued. This has proved to be more difficult than first imagined, mainly because of the political considerations. These revolve around the desire of some members to reinstate a meeting in the eastern suburbs, whereas others have expressed an opinion to the contrary.

Since no member has been able to suggest a suitable venue in the East that offers all the facilities, it was put to the June meeting that the offer of a venue at Parramatta should be actively pursued. Hopefully the use of these premises can be resolved in time for the September meeting (initially on a trial basis).

Another big issue stems from the inaccessibility of the Club's Library at the moment. This was housed at Mick's premises for years in a large glass fronted cabinet kindly loaned by Dennis Page. The cabinet was returned when we left Mick's and the library itself lives in boxes stacked up at Brian Keegan's place - not a very satisfactory solution.

Our information is that we can store this library at the A.P.I. premises in Parramatta so members attending that meeting could peruse or borrow from it. Jim Whittaker is to speak to the necessary officialdom to determine the first available date for our use. Hopefully this will overcome the present difficulties and permit members to once again have access to our library.

On another issue entirely, I wish to announce that I will not be seeking re-election this year to the committee. I will still be active in the club as the BBS Sysop, however it is time for some other member to shoulder the responsibility of serving on the committee.

Since the resignation of Richard Williams as Club Secretary earlier this year, the load of running the club has been left to a committee of just four. Luckily we have been able to secure the services of David Sutton as Public Domain Librarian, Vic Gadd as the ribbon re-inker and John Mercer as Asst. Editor. Without these members sharing some of the burden, the members of the committee would be swamped.

This September will see the SYDTRUG A.G.M. at which the new office bearers will be elected. As far as I am aware, only two members of the existing committee are prepared to stand again, leaving three positions to be filled, including President, Vice-President and Secretary (unless Gordon or Brian wish to change their roles within the Committee).

In the last few months it has become apparent to me that the role of President on a four person committee requires more time than I can devote. The nature of the BBS means that I tend to respond to that before anything else, and this leaves some jobs either delayed or postponed indefinitely. Our club will be better served if I look after the BBS while someone else takes care of administration matters.

Many of you reading this have the necessary skills to handle a committee position, the major one is commitment. An additional need for the President is the ability to chair committee and monthly meetings. As deputy to the President it is useful if the Vice-President can also fulfill this role. The Secretary gets to clear the post box and take minutes at the committee meetings and so a good command of written english is useful.

If you meet these criteria, YOUR CLUB NEEDS YOU!!!

Nuff Sed?

ED. Re your comments on the library, Michael. As I reminded members at the last meeting the contents of the library have always been available. The fact that because of lack of Club storage facility I do in fact keep some of it at home with the rest in store at my work place does not stop people accessing it.

It only requires a phone call to me prior to a meeting to arrange the loan of contents of the library. In the six months that I have been the reluctant custodian of our clubs library NOT ONE person has availed themselves of this facility.

Also I am still trying to recover items "borrowed !!" prior to removal from Mick's place a subject which has been discussed at a number of our Committee meetings.

**CREVICE**

By Jim WHITTAKER

Well, its that time of the month again and I've got a thousand and one things to mention but as soon as I sat down and put pen to paper, I have forgotten them all.

At the end of this article, there is a BASIC and C utility program that should make life easier for some of you.

First, the results of the Great SYDTRUG Raffle. There were 35 entries for the crystal, 12 for the modem and 5 for the Hard Disk Drive.

- 1 Crystal duck won by Roy Lange
- 1 Crystal rabbit won by Jim Whittaker (rigged)
- 1 Crystal pig won by Gill Lyon
- 1 Crystal bird won by Greg Mayo
- 1 Avtec modem purchased by Brian Keegan (rigged again)
- 1 Nice modem purchased by Greg Mayo
- 1 Hard Disk Unit purchased by David Heyes

Congratulations to you (and me) all. Those who have made purchases will have to cough up with the cash ASAP.

I am proud to announce that at the Annual General Meeting we will be having a similar draw. Up for grabs, under the same conditions as the last draw, will be another 2 AVTEK multi modems and an as new 40 track double sided disk drive. Get your entries in quick so that you don't miss out.

Some of you have asked if I will still support the club after the next AGM. The short answer is YES and I will still be helping out. I will still be available for wrapping and posting the newsletters and I will still submit articles to it. The truth of the matter is that I have run out of spare time. I have had an article on system libraries half written for about 6 months, and I do NOT have the time to tidy it up and present it for publication.

RON SLATER OF Computer News 80 please read this.

Ron has written us a lovely letter that explains, in part, how they have taken over from 80 Micro. They also give us the offer of gathering subscriptions. For those of you who have read Northern Bytes and thought that it was far too technical to comprehend, then CN-80 is the one for you. It has a finely balanced presentation. The costs are as follows

CN-80	\$us24.00		\$us24.00
POST	Sea \$us12.00	Air	\$us34.00
TOTAL	\$us36.00		\$us58.00
Australian	\$A 45.00		\$A 73.00 approximately

So, if any of you want to arrange a subscription then see me for details. CN-80 is offering a 20% discount on the CN-80 costs to club members. Good on you CN-80.

Oh, by the way, when I originally wrote to them, I stated that we could not allow reprints of our articles if the publication was done for profit. However, CN-80 is an excellent publication and I feel that SYDTRUG can only gain by allowing them to reprint and this view was also supported at the last general meeting. I hereby authorise COMPUTER NEWS 80 the right to reprint articles that appear in SYDTRUG

NEWS, as long as the appropriate reprint notice (with address) is published.

Next, Brian Keegan (yes, the standby whipping boy) made some comments about LS-DOS 6.3's BASIC interpreter in SYDTRUG NEWS APRIL 1988. Any body who owns a model 4 and does not own a registered copy of LS-DOS 6.3 is simply not getting the best out of their machine. Despite what you may have heard, it is an excellent operating system and I have been using it for about 12 months now without any failures.

Anyway, in an answer to Graeme Griffiths, Brian talks about the Renumber facility and the poor editing features. In pre 6.3 basic, you cannot use your arrow keys to scroll up/down lines of code. However, this feature has been re-instated in 6.3's basic. As well, Left arrow goes to the first line in your program and Right arrow goes to the last. You can also edit a particular line by typing "E linenum" or "L linenum".

The renumber facility works a treat. If, like me, you program in a "structured" or "modular" manner, you can renumber the whole program, or just the particular module that you have been working on. The syntax is:-

```
RENUM 5000,      5000,      10,      5750
           new start, old start, increment, old end
```

This takes care of any external references to any line and is quite fast in execution.

ROY SOLTOFF of MISOSYS please read this

Roy is considering the design of a hardware interface to allow connection of a MS-DOS 20 meg hard disk drive to a model III or IV. The beauty of this set up is that if you decide to go MS-DOS then the Hard disk drive is fully reusable in the new environment. Price would aim at \$495.00 American plus postage, customs duty, sales tax, exchange rates and so forth. If anybody is interested then please give me a ring (expressions of interest at this stage only).

Roy, if you are reading, a lot of us here use a locally made Real Time Clock called GCLOCK. It and any other RTC does not work with the TANDY 5 or 15 meg drives as the drive seems to want exclusive use of the expansion bus at all times. This sends the clocks GAGGAGG. Would your adaptor need a dedicated bus like the TANDY drives or will it co-exist with a RTC.

As exchange, duty, sales tax and postage will all help to add almost \$400.00A to the cost for us, would it be possible to sell just the adaptor only. We may well also be able to give you a bulk order. I have 4 people interested right now and I am sure more will want one after reading this. I understand that a stripped down version may not be economically feasible, but give us some thought. THANKS.

For those of you who use SuperScipsit (as I do), and would like the ability to access PRO-WAM, then the latest Misosys Quarterly (pronounced MY-SEW-SIS) has a filter written by Lyn Sherman to trap the PRO-WAM hot key. It works well and I have not had any problems to date with it. If you want a look at the Quarterly, it is available (in read only mode) in the clubs library. Phone ME on 7722009 to arrange a peek.

Well, now onto the saga of my utility program. Brian was over here the other day and we were having a chat about source assembler files. To be syntactically correct for the commonly available assemblers, they have to contain TAB characters between regions, ie not spaces. However, when Brian wants to put them into the newsletter, he has to strip out the TAB characters and replace them with from 1 to 8 spaces.

The easy way to do this is to let the DOS do the work by:-

```
ROUTE *PR OUTFILE/TXT
LIST INFILE/ASM (P)
RESET *PR
```

This redirects the printer to a file and then when you "print" it out to the file, the printer driver automatically expands the TAB characters into spaces. Finally, you point the printer back to the printer.

This is all wonderful and in fact, most people who submit articles have already done just that. A lot of source listings on the BBS are in this format. The trouble laying in wait for the unsuspecting is that the assemblers will not recognise the spaces as field delimiters, they require TABS.

Well, with Brians help, we whipped up a quick and nasty basic program to change the spaces back into TABs. It started out by looking at each field in turn and stripping out trailing blanks. However, after Brian left, I had a few thoughts about how to handle it and I eventually decided to verify each character in turn. The revised and heavily commented program follows. It is also available on the BBS and will soon be re-written in Model III basic if there is any demand. Also following is a 'C' version of the program.

```

10 / TAB expansion program for ascii assembler listings
15 / By Jim Whittaker - V.P. SYDTRUG - PH 7722009
20 / Written in LS-DOS 6.3 Basic
25 / Date 5-Jun-1988
30 / Edited 11-Jun-1988 changed to stream checking
35 / Available for use but NOT for commercial profit
40 / Also available via CLUB-80 on 3322494
45 /
50 / DESCRIPTION This program will strip out multiple spaces
55 / and replace them with a single TAB. This program
60 / assumes that the original source file has had all of
65 / its tabs fully expanded to spaces (usually by running
66 / the file through a filter) EG
70 /         ROUTE *PR SOURCE/TXT
75 /         LIST SOURCE/ASM (P)
80 /         RESET *PR
85 / ----- END OF HEADER -----
90 /
95 /
100 / MAIN MODULE
110 / =====
120 GOSUB 1000 : ' Initialise
130 WHILE NOT EOF(1)
140     IF INKEY$ (<) ** THEN GOSUB 300
150     GOSUB 5000 : ' Process
160     LINE INPUT #1, IN.LIN$ : 'Get next line from in file
170 WEND
180 GOSUB 2000 : ' Finalise
190 END
200 / ----- END OF MODULE -----
210 /
220 /
300 / SOME JERK PRESSED A KEY - DIDN'T THEY
310 / =====
320 PRINT "I'm still slaving away doing what you told me."
330 / Thanks to Roy Soltoff. I didn't realise that you could
340 / use the LOF and LOC functions with sequential files -
341 / I thought it was only relative
350 PRINT USING "I've done about ##% of your file";
      100 * LOC(1) / LOF(1)
360 PRINT "I probably won't be long, but you can't tell !!"
370 PRINT
380 RETURN
390 / ----- END OF MODULE -----
400 /
410 /
1000 / INITIALISE MODULE
1010 / =====
1020 CLS
1030 INPUT "Enter filename for input eg JIM/TXT "; IN.FIL$
1040 ON ERROR GOTO 32020
1050 OPEN "I", 1, IN.FIL$
1060 INPUT "Enter filename for output eg JIM/SRC "; OUT.FIL$
1070 OPEN "O", 2, OUT.FIL$
1080 ON ERROR GOTO 0
1090 LINE INPUT #1, IN.LIN$ : ' Priming read for while/wend
1100 PRINT "PRESS ANY KEY (except break) FOR PROGRAM STATUS"
1110 PRINT
1120 RETURN
1130 / ----- END OF MODULE -----
1140 /
1150 /
2000 / FINALISE MODULE
2010 / =====
2020 PRINT #2, CHR$(8) : ' EDAS requires EOF marker
2030 CLOSE
2040 PRINT "ALL DONE FOLKS"
2050 SOUND 1,1 : SOUND 1,1
2060 RETURN
2070 / ----- END OF MODULE -----
2080 /
2090 /

```

```

5000 / MAIN PROCESS
5010 / =====
5020 SPACE = 0 : COMMENT = 0 : QUOTE = 0 : OUT.LIN$ = ""
5030 FOR X = 1 TO LEN(IN.LIN$)
5040     IN.CHR$ = MID$(IN.LIN$,X,1)
5050     IF COMMENT THEN
5060         OUT.LIN$ = OUT.LIN$ + IN.CHR$ : GOTO 5120
5070     IF SPACE = 0 AND NOT QUOTE THEN
5080         SPACE = 0 : OUT.LIN$ = OUT.LIN$ + CHR$(9)
5090     IF IN.CHR$ = " " AND NOT QUOTE THEN
5100         SPACE = SPACE + 1 : GOTO 5120
5110     IF SPACE > 0 THEN
5120         OUT.LIN$ = OUT.LIN$ + CHR$(9) : SPACE = 0
5130     OUT.LIN$ = OUT.LIN$ + IN.CHR$
5140     IF IN.CHR$ = CHR$(34) OR IN.CHR$ = CHR$(39) THEN
5150         IF QUOTE THEN
5160             QUOTE = 0
5170         ELSE QUOTE = -1
5180     IF IN.CHR$ = ";" AND NOT QUOTE THEN
5190         COMMENT = -1
5200 NEXT X
5210 PRINT #2, OUT.LIN$ : ' Put it out to the file
5220 RETURN
5230 / ----- END OF MODULE -----
5240 /
5250 /
32000 / ERROR HANDLING MODULE
32010 / =====
32020 IF ERL = 1050 THEN
32030     PRINT "NO SUCH FILE " : RESUME 1030
32040 PRINT "UNRECOVERABLE ERROR"
32050 STOP
32060 / ----- END OF PROGRAM -----

```

Following would have been Jim's "C" program, but sorry at last moment discovered that something wrong with layout of program. All the lines seem to have gotten scrambled during upload or download from BBS. So will present it in next months issue.

Thats it kids - catch you later.

REGARDS JIMBO

TREASURER'S REPORT

From Gordon SYMONDS

My software is up and running again, I found that due to a faulty drive I could not write to my drive zero and for some reason the system would not boot up either.

Membership renewals are flowing in looks like it will be another good year. I note that a number of the renewals are from people who I know do not use their TRS-80's as their prime machine any longer, this is very encouraging.

Here are the financial reports for April and May'88.

APRIL 1988

INCOME:

Members' Subscriptions			
New:	Joining Fee	10.00	
	Club	10.00	
	BBS	6.00	25.00
Members' Purchases			
	Blank Disks	266.00	
	Ribbon Re-inking	9.00	275.00
			-----
	Total		300.00
			=====

EXPENSES:

Newsletter Costs			
	Printing	63.00	
	Postage	40.00	103.00
Consumables for photocopier			
	Paper		89.67
Meeting Rental			50.00
Capital expenditure			

Sales Tax and customs duty on		
CPM package for Library	58.86	
Bank and govt Charges	4.32	63.18
		-----
Total	305.85	=====

MAY 1988

INCOME:

Members' Subscriptions

Joining Fee	30.00	
Club	28.00	
Renewals Club	930.00	
" BBS	250.00	1238.00

Overpayments 20.00

Members' purchases

PD Disks	10.00	
Blank Disks	342.50	
Ribbon RE-Ink	7.00	359.50
		-----
Total	1617.50	=====

EXPENSES:

Postage 8.27

Newsletter costs

Printing	165.00	
Postage	89.00	254.00

Refund: Overpayment 20.00

Committee Expenses 10.00

Members' purchases

Blank Disks 500.00

Meeting Rental 50.00

BBS costs

Phone Rental	33.93	
Repairs	49.30	83.23

Bank and Govt Charges 1.95

Capital Expenditure

Storage Box (PD disks)	20.00	
ISD calls for CPM S/W	7.60	
Power Boards (meetings)	44.00	71.60
		-----
Total	999.05	=====

FONTWRTR/CMD Create char sets for Epsoms. Use with FONDVUR/CMD  
 FONTWRTR/DOC Doco for FONTWRTR/CMD  
 PLANNER/BAS Financial planner  
 PLANNER/DOC Doco for PLANNER/BAS

PDBUS117 : Business & Home

SPS/JCL JCL for SPSMOD/CMD  
 SPSMOD/CMD Modify SCRIPSIT/LC -- allows calculations  
 SPSMOD/DOC Doco for SPS/JCL and SPSMOD/CMD  
 SPSMOD/SRC Source for SPSMOD/CMD  
 PRINTER/DOC Doco for PRINTER3 and PRINTER4  
 PRINTER3/CMD Various printer modes EPSON FX80 - M3  
 PRINTER4/CMD Various printer modes EPSON FX80 - M4  
 PRINTER3/SRC Source for PRINTER3/CMD  
 PRINTER4/SRC Source for PRINTER4/CMD  
 EASTER/BAS Find Easter in any given year  
 EASTER/DOC Doco for EASTER/BAS  
 DIFKIT1/BAS Handle Visicalc DIF files  
 DIFKIT1/DOC Doco for DIFKIT1/BAS  
 FINPLAN/BAS Raw interest rates compounding daily  
 FINPLAN/DOC Doco for FINPLAN/BAS  
 PROFILE4/DOC Doco for RENAME, REPLACE, RM, SUBFIL, TRANSFER /BAS  
 REPLACE/BAS Fill PROFILE4 fields with choice of literals  
 RM/BAS Menu for PROFILE4 enhancement programmes  
 SUBFIL/BAS Remove blank records & write valid ones to disk  
 TRANSFER/BAS Transfer fields between two PROFILE4 files  
 RENAME/BAS Create new PROFILE4 Database by modifying current

PDUUTIL7 : Utilities

NAMEIT/BAS Change NEWDOS/80 V2 banner at boot  
 NAMEIT2/BAS Change NEWDOS/80 "READY" prompt  
 DIRSL0T/ASM Source for DIRSL0T/CMD  
 DIRSL0T/CMD Place file directory in desired slot - NEWDOS/80  
 DIRSL0T/DOC Doco for DIRSL0T/CMD  
 DR/ASM Source for DR/CMD  
 DR/CMD Route video or printer to disk file - NEWDOS/80DR/DOC Doco for DR/CMD  
 INTERRPT/ASM Source for INTERRPT/CMD  
 INTERRPT/CMD Interrupt prog, save CIM to disk. M1 NEWDOS/80  
 INTERRPT/DOC Doco for INTERRPT/CMD  
 MOVE/SRC Move M4 ROM into RAM - use in M3 mode  
 REVSTR/ASM Source for M/L code in REVSTR/BAS DATA statements  
 REVSTR/BAS Reverse a string using USR routine  
 REVSTR/DOC Loose doco for REVSTR/ASM, REVSTR/BAS  
 WHERE/ASM Source for WHERE/CMD  
 WHERE/CMD Pinpoint errors in BASIC lines - gives location  
 WHERE/DOC Doco for WHERE/CMD  
 BOOT/BAS Change banner on NEWDOS/80 M1

PDUUTIL8 : Utilities

ALDATE/ASM Code for ALLWRITE ALK/CMD. Puts date in letters  
 ALDATE/DOC Doco for ALDATE/ASM  
 FILTOMCI/BAS Convert M1/M3 files to transmit via elec. mail  
 MCITOFIL/BAS Converts FILTOMCI/BAS output back to normal  
 MCIPGMS/DOC Doco for FILTOMCI/BAS and MCITOFIL/BAS  
 LINE/BAS Draw line between two video points  
 LINE/DOC Doco for LINE/BAS  
 MENINSTL/ASM Source to MENINSTL/CMD (Install prog to MENU/CMD)  
 MENINSTL/CMD Install MENU/CMD  
 MENU/ASM Source for MENU/CMD  
 MENU/CMD M3 TRSDOS 1.3 disk menu  
 MENU/DOC Doco for MENU/CMD and MENINSTL/CMD  
 DATESET/ASM Source for DATESET/CMD - doco in comment lines  
 DATESET/CMD Sets date in DD/MM/YY format - read DATESET/ASM  
 GM/BAS Menu programme - minimal instruction in prog.  
 MAP/CMD MULTIDOS - syntax MAP : DRIVE# or MAP DRIVE#

PDUUTIL9 : Utilities

BOOT43A/CIM Boot MAP from DOSPLUS 3.50 with new BOOT/SYS  
 BOOT43A/DOC Doco for BOOT43A/CIM  
 BRO/CTL SUPERSCRIPSIT printer driver for Daisywheels  
 D/CMD NEWDOS/80 COPY, KILL, LIST, PRINT or RUN menu  
 D/DOC Doco for D/CMD  
 HDSTART/ASM Source for HDSTART/CMD  
 HDSTART/CMD Patch NEWDOS/80 V2.5 for hard disk with SPRINTER  
 HDSTART/DOC Doco for HDSTART/CMD  
 SDD/CMD NEWDOS/80 V2 disk directory with wild cards  
 SDD/ASM Source for SDD/CMD  
 SDD/DOC Doco for SDD/CMD  
 BLANK/ASM Source for BLANK/ASM - doco in comment lines  
 BLANK/CMD NEWDOS/80 screen blank routine - M3  
 BLANK1/CMD M1 version of BLANK/CMD, change 1810 to 4410H  
 DEMO BLANK/CMD demo. Use START/JCL to initialise  
 START/JCL JCL for BLANK/CMD & DEMO. Type DD START to run  
 FNDEMO/BAS Demonstrates BASIC string handling

PUBLIC DOMAIN SOFTWARE

By David SUTTON

Well, after many many late nights the first batch of new Public Domain programmes are available as follows :-

PDBUS114 : Business & Home

VCLIST/BAS List any part of Visicalc to video, printer, disk  
 VCLIST/DOC Doco for VCLIST/BAS  
 DISTANCE/BAS Calculate distance/course between two cities  
 SUNRISE/BAS Sunrise/Sunset in GMT for any location  
 SUPCALC2/BAS Calculate with double precision  
 SUPCALC2/DOC Doco for SUPCALC2/BAS  
 TRACK/DOC Doco for TRACK/CMD \*\* PROG. ON PDBUS115 \*\*  
 WSNAPPED/DOC Patch Wordstar 3.0. Needs Wordstar install prog.  
 DOTPRINT/DOC Modify DOTPRINT for use with ALLWRITE

PDBUS115 : Business & Home

TRA/ASM Source for TRACK/CMD module A  
 TRB/ASM Source for TRACK/CMD module B  
 TRC/ASM Source for TRACK/CMD module C  
 TRACK/CMD Video store manager. Assembler needs GET/INCLUDE.  
 \*\* Note requires TRACK/DOC on PDBUS114 \*\*

PDBUS116 : Business & Home

HEXCAL/ASM Source for HEXCAL/CMD  
 HEXCAL/CMD Hex calculator plus AND, OR, XOR functions. M1/M3  
 FONDVUR/ASM Source for FONDVUR/CMD  
 FONDVUR/CMD Use prog char sets for FONTWRTR/CMD. Pencil only  
 FONDVUR/DOC Doco for FONDVUR/CMD  
 FONTWRTR/ASM Source for FONTWRTR/CMD

FNDEND/DOC Doco for FNDEND/BAS  
 FX88/BAS Download TRS-88 block graphics to Epson FX88  
 FX88/DOC Doco for FX88/BAS  
 PROMPT/BAS M1 replacement to BASICS 'READY' prompt  
 WHERE/ASM Source for WHERE/CMD - Update to PDUUTIL17 disk  
 WHERE/CMD Pinpoint errors in BASIC. Update to PDUUTIL17 disk -----

PDUUTIL20 : Utilities

CLAWDOS/CMD Mini disk operating system - TRSDOS 1.3  
 CLAWDOS/DOC Doco for CLAWDOS/CMD  
 CLAWDOS/SRC Source for CLAWDOS/CMD  
 CLONE1/CMD Fats file copy - NEWDOS/88 & TRSDOS 1.3  
 CLONE1/DOC Doco for CLONE1/CMD  
 CLONE1/SRC Source for CLONE1/CMD  
 DGRAPH/BAS BASIC demo for VDCTL/OBJ  
 VDCTL/ASM Source for VDCTL/OBJ  
 VDCTL/DOC Doco for VDCTL/OBJ & DGRAPH/BAS  
 VDCTL/OBJ Direct video access and control - M4 BASIC  
 TATUPNI/ASM Source for TATUPNI/CMD  
 TATUPNI/BAS BASIC demo for TATUPNI/CMD  
 TATUPNI/CMD NEWDOS/88 'INPUT?' mod. (lines 350-370 for M3)  
 TATUPNI/DOC Doco for TATUPNI/CMD  
 DIS/CMD NEWDOS/88 directory - 5 wide in lieu of 4  
 DIS/DOC Doco for DIS/CMD  
 DIS/SRC Source for DIS/CMD -----

PDGAME36 : Games

CONCEN/BAS Concentrate on the squares  
 FLIGHTDC/BAS Basic doco for FLIGHTSM/BAS..Load and RUN  
 FLIGHTSM/BAS Flight simulation  
 REACTOR/BAS Graphic reactor simulation  
 MSTRMIND/NB NEWBASIC game  
 WEEKDAYS/NB NEWBASIC game  
 PHONETXT/BAS Spell words with phone numbers  
 MAZE/ASM Source for MAZE/CIM  
 MAZE/BAS Basic interface with MAZE/CIM..see MAZE/DOC  
 MAZE/CIM M/L interface with MAZE/BAS....see MAZE/DOC  
 MAZE/DOC Doco for MAZE programmes  
 MAZEGEN/BAS Maze generator...see MAZE/DOC  
 QUIK/ASM Relocateable keyboard routine for QUIK/BAS  
 QUIK/BAS Two player entrapment game  
 QUIK/DOC Doco for QUIK/ASM and QUIK/BAS  
 DIVISION/BAS M4 game  
 DIVISION/DOC Doco for DIVISION/BAS -----

PDCOMM83 : Communications

AD )  
 BBS/JCL ) COMPLETE  
 BLDMENU/BAS )  
 CHATFLAG ) BBS SYSTEM  
 CHATFLAG/ORG )  
 COMMAND/BAS ) READ  
 DFTGUTS/CMD )  
 DLMOD/BAS ) HOWTORUN/TXT  
 DRIVER/CMD )  
 EMAIL ) FOR FULL INFO  
 ENTRY/BAS )  
 HOWTORUN/TXT ) RUNS UNDER  
 INFO/PCL )  
 LOGREQ/BAS ) NEWDOS/88  
 MANAGER/BAS )  
 MODEMBB1/CMD ) MODEL 1  
 PACKER/BAS )  
 USE ) ONLY  
 XMODEM/CMD )  
 HOST4/CMD M4 TRSDOS 6.2 terminal host utility  
 HOST13/CMD M1/M3 terminal host util.Will work M100 as remote  
 DJALER/BAS Basic dialer using cassette relay.M3 LIST first. -----

PDCOMM84 : Communications

XT4/CMD Version 1.6.8 terminal prog.M4 TRSDOS 6.2  
 XT4/DOC Doco for XT4/CMD, XT4HELP/DAT  
 XT4HELP/DAT Online help for XT4/CMD  
 XT4168/DOC Additional doco for changes to XT4/CMD in V.1.6.8  
 DJALER/ASM Source for DJALER/CMD  
 DJALER/CMD M1/M3 auto dial directory. Use '567' keys -----

In all there are approx 44 disks to be indexed, typed up and issued. I am aiming to issue these at the rate of 11 per month over the next 4 months. This timing however is purely dependent upon work and family commitments.

NOTE... DUE TO SOME PROGRAMMES OF A LIKE NATURE BEING TOO LARGE FOR SINGLE SIDED SINGLE DENSITY 40 TRACK DISKS, IT HAS BEEN NECESSARY TO SPLIT THESE UP OVER TWO DISKS. MAKE SURE THAT YOU READ THE CONTENTS NOTES FOR EACH DISK TO ASCERTAIN THAT IF THIS IS THE CASE, YOU HAVE ALL DISKS REQUIRED FOR A CERTAIN PROGRAMME.

See you at Sefton,

Regards David SUTTON

Supermem/Superdrive in Model 3

By Frank Gottschalk

[Reprinted from "Dynamic Memories", newsletter of the South Bay Users Group, October 1987]

I had two Model 3s and recently acquired a Model 4 to keep the Model 3s in the office and back them up with the Model 4 at home. Increasing volumes of work in Superscripts with its dictionary, along with the Invoicing Program in Profile III+ meant too much time wasted saving to disks, swapping disks, and reloading Superscripts files, programs and invoicing in between.

I considered new machines for lots of money, new programs for some more money, and lots of time to learn them all, (cost me \$1,000 and several months to try Wordstar a couple of years ago). I decided to stick with the Model 3s and 4.

The goal was to speed up the operation, minimize disk swapping, and keep their operation simple, without lots of money.

The first step was to expand the drives to double sided and a DOS to run them. Between the assortment I had collected, some good fortune at work, and lots of help from many club members, I accumulated a third Model 3 for \$50 to experiment on, eight double sided drives for \$100, the 5.3 upgrade to LDOS to drive them for \$25.

I subsequently learned I needed a different version of Superscripts and Profile III+HD version to run in LDOS. The copy of Profile III+HD had had garbage in one file and wouldn't run. After many phone calls, trips, and lots more help from club members, I learned how to install the drives (really easy now), got corrected files and versions of needed programs and even ended up with a Superscripts program that will run DOS commands without having to Exit and reload it!

Best of all, after stripping unneeded files, it all fit on the two double sided drives and left more working space for user files than I had before. The Key Stroke Multiplier in LDOS is a big help and TED (text editor) makes it easy to modify the various JCL files now set up.

This all cut down on the disk swapping required, but still wasted lots of time loading and unloading all the programs. Still needed a fast large drive. Buy three or four hard drives for \$300-600 each plus controllers for another \$500 each from Radio Shack? And have more add-on boxes? No thanks, decided to try these Supermemory boards and make a Superdrive in RAM.

I bought two for the Model 3s and one for the Model 4 along with Memory Test program, as well as the Superdrive program, everything complete for \$720 plus some Utility Programs I haven't used yet.

Now the tricky part. After reading the instructions and getting serious advice from several club members, all warning me that if I did the trace cutting involved, Radio Shack would no longer service my machine if it didn't work or I messed up. Well for the cost of one memory set and a \$50 experimental Model 3, I thought I'd try it.

The instructions were very clear, but I would change the order a little. The hardest part was lifting one leg of some 30 tiny capacitors around the memory banks. I decided to do this, rather than cut them out, in case I wanted to put them back. Even then I busted some of them. I kept the trace cutting to a minimum (4 or 5) by using the alternate method of installing the memory chips, thanks to the advice of another club member. The alternate method is to bend up all pin 9s on the chips and bus them all together above the

board. I practiced on some old chips first, and felt confident before I started. It worked just fine, using adequate static protection.

The mounting of the piggyback memory board was simple, except for getting the 2-80 in the new socket without bending any pins, but it went okay. The soldering of the ten leads was a little tricky in spots, but next time I'll change the order a little to avoid having to solder in between previous joints and/or solder them all on the solder side of the board and tape them all down for vibration protection.

Well it was time for the first step test. I cautiously plugged in the machine and turned it of expecting a puff of smoke. Hurray, NO SMOKE! Booted up the system and it worked! Put in the test program and it spat out the numbers just like the instructions said it should!

Next step is to add the balance of the memory chips, bending up all the #9 pins, and bussing them together with the first bank. It all went fine. Now the ultimate full memory test. Again NO SMOKE! and the test went through all 768K bytes (current limit in Model 3) four times without a hitch. It was working!

Now to install the Superdrive. Well I plugged in the disk and called it up but it stopped and told me it required LDOS 5.1 or TRSDOS 6, even though the label said it would work with LDOS 5.3. A phone call the next morning, after little sleep, to the program developers brought a surprised "don't know why" response. Made arrangements to send them my disk with LDOS 5.3 on it and the Superdrive program copied on to it. A week or so later, I got it back with a note that I had neglected to tell them I had converted to double sided drives. They also fixed it up so it would automatically copy my files into Superdrive and then make it drive :0 system drive. Now I was all set.

I quickly plugged it in and it worked beautifully. I loaded in all my programs and removed my disks. It flashed back and forth between programs and proofread documents quickly instead of all the disk grinding. A quick writing of an auto load program now makes booting simple. Put boot disks in both drives and reset. It comes up eventually with all my needed programs in a fast 720K System drive :0 and goes right into Superscriptsit.

I said eventually because it takes 11 minutes to load my 520K of programs and get to Superscriptsit. It takes so long because all the loading is done file by file because LDOS wont make a mirror image backup because my boot disks are double sided and Superdrive is formatted as single sided with the directory on track one. Anyone know how to speed this up?

All in all I'm happy as a clam. For \$300 each, six hours of work, no relearning time, and lots of help from several club members, I've got a 720K system RAMDRIVE that is FAST and does all I need it to with Superscriptsit, fast dictionary, and an Invoice program. At the end of the day, two keys and two minutes run time backs up all the new and modified programs worked on during the day. This is A MUST! If shutdown without saving to disk, all will be lost! Likewise, unfortunately, all is lost during a power failure if more than a short flicker. There is a Supermemory recovery command if the power outage is short enough or the reset button is depressed quickly enough after a system hangup.

I've since done the second Model 3, which turned out to have a bad PAL chip that they replaced, but ultimately with equally good results and will soon be modifying my model 4 which will be two to three times as fast with the speedup kit also installed.

## THE COMM LINE

By Michael Cooper (SYDTRUG Sysop)

Well, long time no see. Things have been really hectic for me over the past few months. First there was my holiday overseas during April, followed by a return to work at a particularly busy time. Then there was the problems with the BBS hardware!

Most of the regular callers to CLUB-80 BBS would know that I always leave the system on-line whilst away on holidays. Many of the other Sysop's I know are horrified to think I leave the system unattended and exposed to the mercies of the dreaded HACKER.

Usually though, the only problems encountered stem from the hardware or software. One year the power supply on the external disk drives failed, the following year a drive belt snapped, and the year after that the printer seized up, preventing the software from working. This year, one of the disk drives developed I/O errors and promptly crashed the system every time someone tried to logon.

Shortly after returning from my hols, that disk drive failed completely, and then for good measure the video section died as well. On the bright side it's better if everything goes at once, then it's just one visit to the hardware doctor.

The disk drive problem turned out to be a shot tachometer winding on the drive motor. This prevented the drive from spinning at the correct 300 rpm and rendered it useless.

The video section failure turned out to be the Model 4 video controller IC, and was fairly easily replaced from Tandy spare parts. With the disk drive, it turned out cheaper to buy a new one than have the old one repaired and aligned. Bill at M.D.S. has full-height, 80 track DSDD Shugart Drives, brand new in cartons for \$138 each. We bought two, one to replace the shot drive, and the other to replace an existing (but old) drive. This leaves the BBS with two new drives and a spare secondhand one just in case.

Fitting these Shugart Drives into a desktop Model 4 requires some minor surgery as the power connector hangs out the back too far and hits the plastic mounting box. I cut a small portion of the mount away to provide the necessary clearance and that seems to work successfully.

While all the repairs were being carried out the BBS was run on a Model 4 machine owned by Cliff Richards. This has everything including 1 Megabyte of RAM and four half-height drives (not that the BBS software exploited all that memory).

Anyway, everything is back together and on-line again. So far, so good.

As for software, the Disk Notes 2.3 disk has been received from Misosys, and as usual contains patches for various Misosys products. The fix file is designed to be taken apart by a special utility (supplied) call UNARC. There are two versions of it, one for Model 3 mode and the other for Model 4. If you are a reader of the Misosys Quarterly, then look on the BBS for these files.

As well, David Sutton our Public Domain Librarian has produced a further series of disks. These will be available at the club meetings for the cost of the media, or via mail. I will mount some selected excerpts from these new disks on the BBS for your pleasure.

The BBS Reference Library currently contains an old disk of programs that were on the BBS about two years ago. There are some gems in here including VIATEL software and many useful utilities.

Don't forget that the BBS Library has two disks available (the "New" Library and the "Reference" Library) and you must swap from one to the other to download the files. Select the "Change Volumes" option in the Library Catalogue Menu to alternate between disks.

Well that's about the lot for this month, see you soon.

## ZORK TROUBLES

By Kevin FORMBY

Not long after buying my Model 4 I purchased a copy of ZORK, and have spent many happy hours playing at it. For the first year or two I was bemused by the many red herrings contained in it. For example, there is a great temptation to grab some treasure and scurry back to the Living Room and stash it. The correct thing to do is offer all treasure to the thief, if you can meet him, whereupon he will

obligingly store it in his Treasure Room for you. You can then collect it at your leisure after you have killed him. I took a long time to solve the maze adjacent to the Troll Room, and initially thought that the lunch left readypacked on the kitchen table was for sustenance during the long journey. But the maze can be solved quite simply by logical, if tedious, procedures, and you soon learn that the food and water, but not the garlic, is to subdue the cyclops.

There are some very sneaky bits in ZORK. When you are finding the scarab, by digging in sand with a shovel, you are told three times that you are wasting your time. How are you to tell when you are really wasting time in pursuing some action?

By dint of trial and error, luck, occasional brainwaves, and some help from other people, I finally managed to score 348 of the possible 350 points available. Since a treasure scores at least 10 points I must have found all the treasure. Or have I? Have I omitted some action that is worth two points? There are some things mentioned in ZORK that appear to be red herrings, but are they?

My list of mysteries is

- \*the tube of gunk
- \*the broken timber (in the Timber Room)
- \*the nasty knife
- \*the useless lantern
- \*the rusty knife
- \*the skeleton (possibly providing local colour)
- \*the granite wall (mentioned in both  
the Treasure Room and the Slide Room)
- \*the Zork manual
- \*the guide books
- \*the dampness of the Damp Room

If anyone can assist I would be most grateful. I have played and replayed it many times and have reached a Dead End, though not in the maze.

Incidentally, if the above has whetted anyone's appetite for Zork I can highly recommend it, even though it can be frustrating. One final hint: altars are for praying at, and devils were once dealt with by bell, candle, and book..

## COMMUNICATIONS

By Dick CARRICATO

### MODEMS

[Reprinted from a series of articles entitled "The COMM-LINE". This particular one appearing in "Voice of the '80", June 1987]

ED. NOTE: the following article is based on the US "BELL" standard. Out here we use the "CCITT" standard, so as not to hack this article to pieces I have appended a tabulation of the CCITT standards to the end of Dick's text. Please refer to it for the appropriate information.

A few years ago a discussion of telephone Modems for personal computers would have required only a few paragraphs. There was really only one kind, a 300 baud acoustically coupled device that cost about three hundred dollars - when you could buy one. But those days are past. Now most modems are directly coupled to the phone lines using standard modular plugs, and the speed has been increased to 1200 and even 2400 bps. Further, the cost of a 1200 bps modem has dropped from over six hundred dollars to just under one hundred dollars.

The two most popular types of modem today are the 300 bps and the 1200 bps "Smart Modems", however, the 2400 bps device is becoming more popular all the time. We live in a world of 'faster is better', but as we discussed earlier, the faster the data rate, the more susceptible it is to errors.

#### 300 Baud Modems

The popular 300 baud Modems used for personal communications are based on the Bell 103 specification. This standard specifies the frequencies and frequency shifts for a 0 to 300 baud communication path between a terminal

and a computer. The terminal sends its data using the frequencies 1270 Hz for Mark and 1070 Hz for Space, while listening for the computer at 2025 and 2225 Hz. This is known as Originate Mode. The computer sends its data on the frequencies 2225 Hz for Mark and 2025 Hz for Space, while listening on 1270 and 1070 Hz. This is known as the Answer Mode. This entire process is a relatively simple application of a technique known as Frequency Shift Keying. Simple electrical filters are used to separate the two frequency bands, and it all fits easily within the bandwidth capabilities of the telephone transmission system.

#### 1200 BPS Modems

As we discussed some time back, a bandwidth of about 1.5 times the baud rate is required to send data in one direction over the phone lines. For two way transmission of 300 baud data about one half of the capability of the standard phone line is needed. If the baud rate were increased to 600, almost the entire capability of the line would be used. At 1200 baud, there would be little chance of error free transmission. (It is possible over specially conditioned - and paid for - lines.)

In order to increase the speed to 1200 bps, entirely new techniques had to be employed. The system that was developed uses 600 baud, two bits per baud, Phase Shift Keying. It transmits synchronous data over the telephone lines, which requires that the modem convert the terminal's asynchronous data into synchronous data prior to transmission. This system is defined by Bell specification 212A, which describes a dual modem capable of operating at either 1200 bps, using Phase Shift Keying, or 0 to 300 bps, using Frequency Shift Keying, like the 103 type modem.

Another major departure from the 300 baud system is that all data sent by the 1200 bps system are scrambled, and then unscrambled by the receiving modem. Because the transmission is synchronous, timing information must be extracted from the data. This is easiest to accomplish when the data bits are random, so a randomizing algorithm (scrambler) is applied to the data bits before transmission. Of course this scrambling also increases the effect of errors.

In the originate mode, data are sent by Phase Shift Keying (modulating) a 1200 Hz frequency, and data are received by Phase Detecting (demodulating) a 2400 Hz frequency. The answer mode sends on the 2400 Hz frequency and listens to the 1200 Hz frequency. Of course, as we have all heard many times, MODEM stand for modulator-demodulator, the two original functions performed by modems.

What does all this mean to the user? Really only two things that I can think of. 1) The 1200 bps modem goes four times as fast as a 300 bps modem with more susceptibility to noise. But it can't be too bad or nobody would be using it. And 2) If you listen to a pair of 300 bps modems on the phones, it sounds possible for the modems to detect the difference in the tones you hear. When you listen to the rasping hissing sounds from a pair of 1200 bps modems, you are quite sure that no intelligence will ever be extracted from what ever is going on.

#### Smart Modems

The outstanding feature of a Smart Modem is its ability to communicate with its operating software using the same communications channel as its data. It accepts and responds to commands, and returns status information. This was first accomplished about 1980 by Bizcomp, and then expanded and standardized by Hayes. Today, virtually all modems for personal computer use are Hayes compatible, Bell 212A compatible, smart modems. Some manufacturers have gone beyond Hayes in the functions performed by their modems, but they still maintain compatibility with Hayes.

It would require about twenty pages to fully describe the Hayes command set. Since this is usually covered in the user's manual included with the modems, we won't attempt it here. What we will do is discuss the kinds of things that can be done with the commands and responses, and try to become familiar with some of the more common commands.

The smart modem is always in one of two states, the command state, or the on line state. At power on the modem is reset to the command state. It sits there waiting to be told what to do. It switches to the online state as a

result of either answering a call when in the answer mode, or by originating a call (dialling a number and detecting a carrier) when in the originate mode. Although the important task of sending and receiving data is done in the on line state, our concern here is mainly with the command state.

(AT) All commands to the modem begin with AT, attention, and end with a carriage return. The command AT alone is valid and gets a response OK from the modem. Really, if you walk up to a terminal connected to a smart modem, and it is not on line with another modem, and you type AT <ENTER>, it will flash back on the screen "OK". The modem actually uses the A and the T to determine the mode of operation it should be in. The baud rate of the sending equipment is determined from the timing of the bits in the 'A' of AT. The word length and parity are determined from the 'T'. All commands must be in upper case.

(A/) An exception to the rule that all commands begin with AT is the command A/ (no carriage return which repeats the last command. The last command could have been a simple AT, a twenty-five digit phone number, or up to forty characters of other commands. The last command is stored in a forty character buffer in a Hayes modem. Some other manufacturers have increased the size of the buffer.

(D,T,P) From now on when we talk about commands, it should be understood that there is always an AT at the beginning. Multiple commands can follow the AT, but they should be limited to forty characters and end with a carriage return. D puts the modem into originate mode ready to dial a call. T and P stand for tone and pulse dialling. The command 'ATDT 12345' will dial 12345 using touch tones, and 'ATDP 12345' will pulse dial 12345. 'ATD' by itself will take the phone off-hook and, as in each of the other cases above, the modem will listen for a carrier from an answer modem. If one is heard within a reasonable time the modem goes into originate mode. If one is not heard, the modem responds with "NO CARRIER". The 'D' dialling command, if used, must be the last command sent.

Spaces don't count in the forty character limit. Other punctuation does count, and some punctuation marks are used for commands. Check your documentation before separating area codes with commas or semicolons.

(,) By default, each comma that is sent causes the modem to pause for two seconds. But, the pause time for each comma is also programmable within the modem.

(E,Q) The E command determines whether commands are echoed back from the modem or not, while Q determines whether result codes are echoed back or not. Result codes are the responses that the modem returns such as OK, RING, NO CARRIER, CONNECT and so on. E0 turns off command echoes while Q0 turns on result codes. (Who said we needed consistency in this world?) E1 turns the command echoes back on, and Q1 turns the result codes off. At least it is consistently inconsistent.

(M) The M command controls the speaker in the modem. M0 shuts the speaker off, M1 allows the speaker to be on until carrier detect and then shuts it off, and M2 turns the speaker on continuously. Unless you have nerves of steel, I suggest M2 only for short test periods.

(R) Most dialling is done in originate mode. If it is ever necessary to dial in the answer mode, put 'R' at the end of the number. This puts the modem into the answer mode for modulation and demodulation, but leaves the phone handling in the originate mode. That is, the modem will dial normally, but instead of waiting for an answer tone it will generate one. If there is an originate modem at the other end of the line, communications will be established.

In addition to these commands there are many others that allow the programming of time delays and defaults for special characters. Some of the time delays include wait time for dial tone, wait time for carrier detect, pause time for the comma command, delay time between loss of carrier and hang up, and duration and spacing of touch-tones. The default character set includes the escape character, the character recognized as carriage return, character recognized as line feed, and backspace character.

It is fun to experiment (play) with the smart modem command set. But, when it is all goofed up and you would like to return to the manufacturer's default settings, it is

not necessary to turn the power off. Just send the 'Z' command. An ATZ<Enter> and the modem is reinitialized to its power on settings.

Next time, we will take a look at these commands and how to use them to establish communications between computers. In the meantime, to use what has been discussed here, just put any communications software into the terminal mode and type "AT<Enter>". If you have a smart modem connected, and the software is talking to the correct serial port, the modem will respond with "OK". With the phone line connected or disconnected you can dial numbers, listen to them being sent and watch the various return codes come to the screen. Again, you can't hurt anything, so play until you really understand what is going on.

ED. Following are the details of CCITT standards:-

Modem	Baud Rate	Duplex	Transmit		Receive		
			Space	Mark	Space	Mark	
	Hz		Hz	Hz	Hz	Hz	
CCITT V.21 Orig	300	Full	1180	980	1850	1650	
CCITT V.21 Ans	300	Full	1850	1650	1180	980	2100
CCITT V.23	1200	Half	2100	1300	2100	1300	2100
CCITT V.23 Back	75	-	450	390	450	390	
CCITT V.22 Org	1200			1200		2400	
CCITT V.22 Ans	1200			2400		1200	

Sorry do not have info to handle 2400 operation.

### ORBITS

By Kevin FORMBY

This is a simple little Basic program that enables drawing of elliptic orbits to illustrate planetary motion. I wrote it to show that Newton's universal law of gravitation does in fact lead to stable orbits. There are probably easier equations to use, but this is very fundamental. As will be seen by the remarks after the program, this is not really suitable for Basic. I must now bestir myself and have another crack at machine language.

The program requires high-resolution graphics, and was written for a Model 4 utilising the Tandy HI-Res card and Tandy's "BASICG".

The program is stopped by pressing BREAK. To start a new orbit press RUN.

```

10 CLS:'ORBIT an attempt to map planetary orbits
20 'an original from JFK
30 'the origin is placed at 0,0
40 'the initial velocities are made VX, x-component; VY, y-component
50 'the constant of gravitation is G
60 CLR
70 CIRCLE(100,120),10,1:'circle representing central body
80 INPUT"Enter initial velocity in the X direction:";VX
90 INPUT"Enter initial velocity in the Y direction:";VY
100 GLOCATE (0,0),0
110 PRINT #3,"Hor comp =" ,VX," Vert comp =" ,VY
120 X=0;Y=-50:'arbitrary starting point
130 G=10000
140 DT=.1:'time step. This line can be varied--see the final notes.
150 SCREEN 0
160 DN=X*X + Y*Y;DEN=DN*.5
170 A=-G/DN:'Acceleration towards centre
180 IF DEN<10 THEN 180:'stop if satellite collides with central body
190 AX=AX/DEN:'acceleration in x dir
200 AY=AY/DEN:'acceleration in y dir
210 DX=VX * DT + .5 * AX * DT*DT:'increment of x
220 DY=VY * DT + .5 * AY * DT*DT:'increment of y
230 X=X+DX:'new value of x
240 Y=Y+DY:'new value of y
250 PSET(X+100,Y+120),1:'values of x and y referred to origin at 100,120
260 VX=VX+AX*DT:'new x velocity
270 VY=VY+AY*DT:'new y velocity
280 GOTO 160
    
```

Approximate orbits can be produced, for example by making VX=10 and VY=0, but they are not ellipses but spirals. This is because DT is too large, and the accumulated error becomes excessive around the orbit. If we make DT=.01 we get fairly good ellipses, but the drawing of them is too slow to be interesting.

Note. If you have a Graphic Solutions HI-RES card it should not be too difficult to get it running under " GBASIC".

**CAPTURE**

By Warwick SANDS

This program arose from a request from John Hildyard for a mechanism that would let him get the output of DAY/CMD into a form usable for manipulation within a BASIC program.

While you could use device to create a new logical device and then route the video output to the file that way. It seemed a sledge-hammer and peanut exercise. So I wrote CAPTURE/CMD. It is a Psuedo-System File and it will intercept all characters being sent to the video and store them in a string array.

Every time a CHR(13) is sent to the screen, the next array variable/element is used to store the next line of output. Also if the variable/line length will exceed 255 characters then the next variable/element is selected. The CHR(13)'s are not stored .

The lines are stored starting in element 0 of the specified array. If only a single line is to be captured, then a simple string variable may be used. Syntax is:-

```
CMD"CAPTURE [+] var$(max),doscmd"
```

The optional + forces echo of characters to the display, var\$ is the name of the string array into which you want the output to be stored. The array must be singly dimensioned. The array subscript is the maximum element of the array. This value determines the maximum number of lines you can capture. This value can be a string literal or a BASIC variable name. NOTE: var\$(max) MUST BE terminated with a comma ','.

doscmd can be any valid command legal under mini-dos. i.e. DIR, FREE, SYSTEM or PDRIVE are valid DOS commands, DAY, LOGON etc as PSfiles are also legal under Mini-Dos.

COPY, SUPERZAP, DIRCHECK are not legal under Mini-Dos and will cause the program to abort with an ILLEGAL DOS FUNCTION error.

If you have been doing a lot of string processing, it may be worthwhile to force a string space garbage collection by doing an AZ=FRE(A\$) before doing the string capture. This will ensure that all free string space can be used by the routine.

ERRORS that may arise:-

Since we can let BASIC handle these errors, the error reporting is identical to standard BASIC.

OUT OF STRING SPACE == there must be at least 2 bytes free in string space.

TYPE MISMATCH == the variable must be a string variable  
SYNTAX ERROR etc == standard problems with evaluating a routine.

The following BASIC program will give a simple demonstration of how it works.

```
10 CLS:CLEAR 10000:DEFINT A-Z:MX=23
20 DIM A$(MX)
30 WAIT "Hit <enter> to do the CAPTURE"+CHR$(13);FOR CHR$(13)
40 CMD"CAPTURE + a$(MX),DIR"
50 WAIT "Hit <enter> to print out the array"; FOR CHR$(13)
60 PRINT
70 J=-1:DO:INC J
80 PRINT A$(J)
90 UNTIL J=)MX OR A$(J)="
```

Don't forget to give CAPTURE/CMD the PSF attribute with:-

```
ATTRIB,CAPTURE/CMD,PSF=Y
```

If this isn't done you will find your system crashes whenever you try to use it.

```
10 CLS:CLEAR 10000:DEFINT A-Z:MX=23
20 DIM A$(MX)
```

```
30 WAIT "Hit <enter> to do the CAPTURE"+CHR$(13);FOR CHR$(13)
40 CMD"CAPTURE + a$(MX),DIR"
50 WAIT "Hit <enter> to print out the array"; FOR CHR$(13)
60 PRINT
70 J=-1:DO:INC J
80 PRINT A$(J)
90 UNTIL J=)MX OR A$(J)="
```

```
*****
*
* Remember to give this file the PSF attribute with:-
*
* ATTRIB,CAPTURE/CMD,PSF=Y
*
*****
* A program that will intercept all characters sent to the
* video and store them in a string array.
* Each element of the array will hold a single line of output.
* A line is defined as either:-
* all characters displayed between CHR$(13)'s. i.e.
* a line is terminated by a CHR$(13). The CHR(13) is not stored.
* OR
* 255 characters (max string length)
* Lines having only a CHR$(13) will be skipped.
*
* The lines are stored starting in element 0 of the specified array.
* If only a single line is to be captured, then a simple string
* variable may be used.
*
* Syntax is:-
* CMD"CAPTURE [+] var$(max),doscmd"
*
* the optional + forces echo of characters to the display
* var$ is the name of the string array into which you want the
* output to be stored. The array must be singly dimensioned.
* The array subscript is the maximum element of the array.
* This value determines the maximum number of lines you can
* capture. This value can be a string literal or a variable
* name. If you want a complex expression (MX-4) then you will
* have to build a tokenised string using LINELET.
* The variable name MUST BE terminated with a comma ','
* doscmd can be any valid command legal under mini-dos. i.e.
* DIR, FREE, SYSTEM or PDRIVE are valid DOS commands,
* DAY, LOGON etc as PSfiles are also legal under Mini-Dos.
* COPY, SUPERZAP, DIRCHECK are not legal under Mini-Dos and will
* cause the program to abort with an ILLEGAL DOS FUNCTION error.
*
* If you have been doing a lot of string processing, it may be
* worthwhile to force a string space garbage collection by doing
* an AZ=FRE(A$) before doing the string capture. This will ensure
* that all free string space can be used by the routine.
*
* ERRORS that may arise:-
* since we can let BASIC handle these errors, the error
* reporting is identical to standard BASIC.
* OUT OF STRING SPACE == there must be at least 2 bytes
* free in string space.
* TYPE MISMATCH == the variable must be a string variable
* SYNTAX ERROR etc standard problems with evaluating a routine
*
*****
```

```
BUFF1 EQU 6A00H ;start of BASIC overlay area
VERSN EQU ' 1' ;version number
```

```
DEBUG MACRO #DB=#DEBUG#
IF #DB
RST 30H
ELSE
NOP
ENDIF
ENDM
```

```
$PAD.IT MACRO #LEN1,#LEN2,#CHAR=0,#ERROR=-1
IFGT #LEN1,#LEN2
IF #ERROR
ERR CODE TO LONG
ENDIF
ELSE
IFNE #LEN1,#LEN2
DC #LEN2-#LEN1,0
ENDIF
ENDIF
ENDM
```

\*\*\*\*\*

\* Load it into the DOS overlay area (4000H-51E7H) and check that it  
 \* is has been invoked from within BASIC.  
 \* Then move it up into BASIC's second overlay area. (6A00H-6FE7H)  
 \* After this we set up the BASIC overlay so that we force an  
 \* entry into our code. At this point of time the BASIC  
 \* interpreter is fooled into thinking that our code is part of  
 \* BASIC.  
 \* This means that we can avail ourselves of all the standard  
 \* BASIC error messages and error handling facilities.  
 \*  
 \*

ORG 4D00H ;put it in the overlay

\$ENTRY

```

DEBUG
PUSH HL ;save source
LD HL,4369H ;set up the regs
LD BC,65AEH ; for the model
LD DE,65C0H ; one
LD A,(442BH) ;get DOS identifier
SUB 1 ;which model ?
JR Z,MODEL_1 ;go if model 1
LD HL,4289H ;reset the regs for the
LD BC,6587H ; model three
LD DE,6599H
    
```

MODEL\_1

```

BIT 0,(HL) ;BASIC active ?
JR Z,NOT_BAS
INC HL ;check if it is under
BIT 7,(HL) ; Mini-DOS mode ?
JR NZ,DO_IT ;do it if Mini-dos
    
```

NOT\_BAS

```

LD HL,MESS$
CALL 4467H ;give message
LD A,2AH ;ILLEGAL DOS Function
JP 4409H ;go to error
    
```

DO\_IT

```

LD (SET_MD),HL ;store Mini-DOS flag
PUSH AF ;save model flag
XOR A ;reset the overlay flags
DC 3,0 ; leave 576EH alone
LD (BC),A ; flags
NOP ; and 6599H/65C0H
LD BC,$LEN_1 ;set up the params
LD HL,$STRT
LD DE,BUFF1+256
LD (6A2FH),DE ;store Xfer address
LD A,8CAH ;JP NZ,nnnn
LD (6A2EH),A ;into the code
LDIR ;move the code
POP AF ;get model flags
LD HL,5DEEH ;Error already displayed
LD DE,5E16H ;Undisplayed error
JR Z,NOT_MD3 ;if model 1
LD HL,5DC7H ;set for model 3
LD DE,5DEFH
    
```

NOT\_MD3

```

LD (ERR_DIS),HL ;now update the code
LD (ERR_UND),DE ; in the module
POP HL ;get the source
LD (OUR_CMD),HL ;store it
JP 402DH ;exit no error
    
```

\*\*  
 \*\* The addresses 6A2E-6A30 will remain constant in any later  
 \*\* release of NewDos86. Use the above code, and providing no  
 \*\* subsequent errors occur, control will be passed to your  
 \*\* routine via the BASIC cmd handler.  
 \*\*

\$STRT

```

ORG BUFF1+256
LORG $STRT
    
```

\*\*\*\*\*  
 \* Some points need to be kept in mind.  
 \* Since we are turning off the video we must ensure that control  
 \* will be returned to this program if any sort of error occurs.  
 \*  
 \* DOS will always return to this program if an error occurs,  
 \* providing the doscmd exits in the correct fashion. All files  
 \* written by W.S. & D.S. Sands do so, as do all in-built DOS  
 \* commands.  
 \*

START\$

```

PUSH HL ;save BASIC source
    
```

DEBUG

```

LD HL,40F2H ;turn off the ERROR handler
LD A,(HL) ;get current stats
LD (HL),-1
LD (OLD_FLG),A ;store current status
LD HL,(401EH) ;get the video driver
LD (OLD_VID),HL ;address and store it
LD HL,(41A7H) ;get BASIC error handler
LD (OLD_ERR),HL ;store it
LD HL,OUR_ERR ;reset BASIC error handler
LD (41A7H),HL ;to our routine
LD HL,0000H ;HL -> rest of command
    
```

OUR\_CMD

```

EQU $-2
LD A,(HL) ;now see if echo to
SUB '4' ; screen required ?
LD (OUR_FLG),A ;store the result
JR NZ,NOL_RST ;go if not a '4'
RST 10H ;skip the '4'
    
```

NOL\_RST

```

CALL GET_VAR ;go find variable details
LD (VAR_ADD),DE ;store variable address
XOR A ;set the string length
LD (DE),A ; to null
RST 8H ;now check termination ok
DB ','
PUSH HL ;save command start
LD HL,(40A0H) ;HL -> bottom string space
INC HL ;bump the ptr
LD (STR_BOT),HL ;store it
EX DE,HL ;swap into DE
LD HL,(VAR_ADD) ;get string address
INC HL ;bump past length
LD (HL),E ;store the string address
INC HL
LD (HL),D
LD HL,(40D6H) ;HL-> top string space
EX DE,HL ;into DE
OR A ;reset carry flag
SBC HL,DE ;HL = bytes free
LD E,1AH ;OUT OF STRING SPACE
JP NC,19A2H ;if no space left
    
```

\*\*\*\*\*  
 \* We have completed the BASIC side of the evaluation.  
 \* We know where to start storing the data and we know how  
 \* many lines we can store and where the variables are.  
 \*  
 \* Now we intercept the video output and send it to our  
 \* capture routine.  
 \*  
 \* The success or otherwise of the DOS routine will be returned  
 \* in the AF register. This is saved for correct exit to BASIC.  
 \* After we complete the doscmd we must remove our routine from  
 \* the video driver and reset all the other parameters.  
 \*  
 \* Since we stored the data from the bottom of string space upwards,  
 \* we force a garbage collection to move these new strings into their  
 \* correct positions.  
 \* By setting the 'true' top of string space to point at the current  
 \* next string position, we ensure that only the strings we have  
 \* created will be processed by the garbage collector. This speeds  
 \* up the operation to quite a large extent.  
 \*

```

LD HL,OUR_VID ;store the new routine
LD (401EH),HL ; for video
LD HL,0000H ;HL -> Mini Dos flag
SET_MD EQU $-BUFF1+256+$STRT-2
SET 7,(HL) ;flag Mini-Dos mode
EX (SP),HL ;get the source
CALL 4419H ;execute DOS command
POP HL ;HL-> mini-Dos flag
RES 7,(HL) ;turn off Mini-Dos
PUSH AF ;save the flags
CALL EXIT ;fix the vectors
    
```

DEBUG

```

LD HL,(40B1H) ;get top mem
PUSH HL ;save it
LD HL,(40D6H) ;get top of string space
LD (40B1H),HL ;speed up the tidy
CALL 28E6H ;do the garbo
POP HL
LD (40B1H),HL ;reset highmem
POP AF ;reget flags
POP HL ;get the source
JP C,0000H ;go if error displayed
    
```

ERR\_DIS

```

EQU $-2
RET 2 ;exit if no error
JP 0000H ;if undisplayed error
    
```

ERR\_UND

```

EQU $-2
    
```

```
*****
*
* This is the routine that stores the characters in the array.
* If echo is desired the character is printed.
* If the character is a CHR$(13), the next variable is selected.
* If the line length will exceed 255 characters with the next
* character, the next variable is selected.
* Once all of the variables have been used, the routine is
* inhibited by forcing an early exit from the routine.
*
```

```
OUR_VID
    PUSH BC ;save the character
    LD A,00H ;do we print display
OUR_FLG EQU $-1 ; the character ?
    OR A ;set the flags
    CALL Z,0000H ; only if '+' specified
OLD_VID EQU $-2
    POP BC ;C=char to send
END_IT NOP ;force exit point
    LD A,C ;get the character
    CP 13 ;end of line ?
    JP Z,NXT_VAR ;go if end of string
    LD HL,0000H ;HL-> start of string
STR_BOT EQU $-2
    LD (HL),C ;store the char
    INC HL ;bump the ptr
    LD (STR_BOT),HL ;and store for next time
    EX DE,HL ;save string ptr
    LD HL,0000H ;HL-> variable address
VAR_ADD EQU $-2
    INC (HL) ;bump string length
    LD A,(HL) ;get the string length
    INC A ;will it wrap around
    CALL Z,NXT_VAR ;move to next string
    EX DE,HL ;HL -> string spot
    LD DE,(40D6H) ;now check on size
    OR A ;(STR_BOT) > (40D6H)
    SBC HL,DE ;if not no string space
    RET C ;exit if ok
    PUSH HL ;set up the stack
    PUSH DE
FINISH
    LD A,0C9H ;else force an exit by
    LD (END_IT),A ;plugging in a RET
    POP DE
    POP HL
    RET
NXT_VAR
    PUSH HL ;save the registers
    PUSH DE
    LD HL,(VAR_ADD) ;get the variable address
    LD A,(HL) ;get string length
    OR A ;any chars in string ?
    JR Z,N_EXIT ;go if null string
    LD DE,0000H ;get the variable count
VAR_CNT EQU $-2
    DEC DE ;adjust it
    LD A,D ;at zero ?
    OR E
    JR Z,FINISH ;go if no more vars
    LD (VAR_CNT),DE ;store for next time
    INC HL ;skip the length
    INC HL ;and LSB
    INC HL ;and MSB
    LD (VAR_ADD),HL ;store the address
    XOR A ;set the length to
    LD (HL),A ;null
    INC HL ;skip to next byte
    LD DE,(STR_BOT) ;get spot
    LD (HL),E
    INC HL
    LD (HL),D
N_EXIT
    POP DE ;get the registers
    POP HL
    RET
```

```
*****
*
* Copy the variable name into a local buffer. Find out its VARPTR
* address.
* If it is an array then compute the total number of elements in the
* array and find the VARPTR of array(0).
*
* The variable must be a string variable.
*
```

```
GET_VAR
    LD BC,1 ;flag simple variable
    LD DE,OURBUF ;set up a copy of the
G_LOOP
    LD A,(HL) ;variable name
    LD (DE),A ;in our buffer
    INC HL
    INC DE
    CP 13 ;end of line ?
    JP Z,1997H ;go if error
    CP '(' ;array variable ?
    JR Z,ARRAY
    CP ',' ;simple variable ?
    JR NZ,G_LOOP
    DEC HL ;HL -> comma
GET_ADD
    LD (VAR_CNT),BC ;store array size
    PUSH HL ;save source
    LD HL,OURBUF ;HL -> variable name
    CALL Z60DH ;go find variable
    POP HL
    JP 0AF4H ;check if string and exit
ARRAY
    EX DE,HL ;HL -> byte after '('
    LD (HL),'0' ;change array value
    INC HL
    LD (HL),')' ;close the bracket
    EX DE,HL ;reset the source ptr
    CALL Z802H ;find the size of the array
    INC DE ;arrays start at 0
    LD C,E ;move from DE
    LD B,D ; to BC
    RST 8 ;check for closing
    DB ')'
    JR GET_ADD ;now find array start
OUR_ERR
    CALL EXIT ;fix up the vectors
    JP 19A2H ;continue error handler
EXIT
    PUSH AF ;save flags
    LD HL,(OLD_VID) ;now to restore the video
    LD (401EH),HL ; to the old driver
    LD A,00H ;get original stats
OLD_FLG EQU $-1
    LD (40F2H),A
    LD HL,0000H ;reset BASIC error
OLD_ERR EQU $-2
    LD (41A7H),HL ; vector
    POP AF ;get the flags
    RET
MESS$ EQU $-BUFF1+256*$STRT
    DB 28,31,10,'Capture Screen Data version 0.'
    DW VERSN
    DB 10,' is a BASIC utility.'
    DB 13
$LEN2 EQU $-START+$STRT-$ENTRY
OURBUF $PAD_IT $LEN2,2ECH
$LEN1 EQU $-START$
    END $ENTRY
```

**SYSTEM 80**

From DICK SMITH ELECTRONICS

Following is a copy of a letter received from Dick Smith Electronics:-

The Secretary SYDTRUG ( System 80 ) P.O. Box 297 PADSTOW NSW 2211

Dear Sir/Madam,

Dick Smith Electronics is directly involved in the marketing and support of the System 80 Computer and its associated peripheral. As such we are aware of the popularity of the System 80 and its many enthusiasts, both current and potential.

In association with the popularity of the System 80 computer has been the establishment of System 80 User Groups.

In this regard I am endeavouring to update our records of the various User Groups that have been set up for the users of the System 80 Computer. As such I would be grateful if you could assist me by detailing your knowledge of the System 80 Users Groups that are currently established, their addresses, and if possible, a contact name with whom I can refer to. Please find enclosed a self addressed envelope to return to me with this information.

My gratitude and appreciation for your assistance in this matter and I look forward to hearing from you in the near future.

Yours sincerely, DICK SMITH ELECTRONICS.

Signed. Michael BROWN, COMPUTER SUPPORT. MBCS08ss

Well !! I must say we were surprised and not a little amused to receive this letter. To the best of our knowledge the System 80 range of computers, peripherals and software were discontinued a number of years ago.

In their favour I believe that Dick Smith still have available System 80 spares on special order from their warehouse. Although I think it has been a couple of years since I saw what was purported to be the last of the System 80 mother boards being sold off under special prices.

At the risk of being pedantic I should point out to Mr Brown and anyone else concerned that SYDTRUG does not stand for System 80. It stands for "SYDNEY TRS-80 USERS GROUP" and as such we do support the System 80 because it is a passable clone of the TRS-80 MODEL 1. There are however hardware and software differences which in the main have been overcome by interested parties.

Within our group the System 80 is quite popular and there are a number of excellent machines in use some with extensive modifications (enhancements ??).

Are we to suppose that there is to be renewed interest in the System 80 range by Dick Smith ?? We will reply to Mr. Brown's letter as helpfully as we can, but in the meantime anyone with knowledge of System 80 User Groups or other Groups such as ours which provide support to System 80 users, please let us know their details.

BLK.

---



NOTE THAT TO BE VALID THIS FORM MUST BE IN OUR HANDS BY THE 23RD JULY '88  
SO THAT MEMBERS CAN BE INFORMED IN THE AUGUST EDITION OF THE NOMINATIONS...

=====  
Date.....Place.....  
I .....Membership No.....  
wish to nominate.....Membership No.....  
for the position of.....in the forthcoming SYDTRUG  
Committee Elections held on September 1989.

Signed.....  
Date.....

This nomination is seconded by.....Membership No.....  
I.....Membership No.....  
wish TO ACCEPT the above nomination

Signed.....  
Date.....

=====  
Date.....Place.....  
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Signed.....  
Date.....

=====



THIS FORM IS A SURVEY TO ASSIST THE NEWSLETTER EDITOR IN COMPILING AND SELECTING ARTICLES FOR YOUR MAGAZINE.

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=====

Prime or MOST used SYSTEM..

COMPUTER.....DOS.....  
STORAGE. 5.25 disk s/d d/d s/s d/s  
          40trk          80trk  
          (MS-DOS 720k 1.2Meg )  
3.5 disk s/s d/s  
          720k          1.2Meg  
Hard Drive Type Capacity

Prime or Main USE.. Program Usage  
.....  
.....  
.....  
.....  
.....

Favorite Utilities  
.....  
.....

Printer Brand.....Model.....Serial or Parallel

-----

Secondary or lesser used SYSTEM..

COMPUTER.....DOS.....  
STORAGE. 5.25 disk s/d d/d s/s d/s  
          40trk          80trk  
          (MS-DOS 720k 1.2Meg )  
3.5 disk s/s d/s  
          720k          1.2Meg  
Hard Drive Type Capacity

Main USE.. Program Usage  
.....  
.....  
.....  
.....  
.....

Favorite Utilities  
.....  
.....

Printer Brand.....Model.....Serial or Parallel

-----

OTHER COMPUTER related equipment ie printers, plotters, pocket PC's laptops etc

.....  
.....  
.....

Any suggestions for improvements.....  
.....  
.....

Name.....Membership No.....

Thank you for your help..

